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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,950	01/27/2004	John C. Tsai	60617.301601	1949

32112 7590 12/16/2005

INTELLECTUAL PROPERTY LAW OFFICE
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EXAMINER


UNELUS, ERNEST

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,950	TSAI ET AL.	
	Examiner	Art Unit	
Ernest Unelus	2828		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Cliche et al. (US pub. 2003/0174743).

With respect to claim 1, Cliche discloses a tunable etalon assembly (14) including a Fabry-perot ("FP") etalon (12), a photodetector (42) suitable to receive the laser beam after filtering by said FP etalon and generate a detected signal based on transmitted intensity (see fig. 2A and paragraphs 0071 and 0074); and a controller (34) suitable to: generate said etalon tuning signal (44); and receive said detected signal and generate a laser tuning signal based thereon (see fig. 2A and paragraphs 0071 and 0074), thereby facilitating controllably tuning the wavelength of the laser beam (18) emitted by the tunable laser (16) (see fig. 2A). Cliche also discloses a thermal unit (paragraph 0078), and a Febry Perot laser inherently has paired

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reflectors and where the thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-8, 10, 12, and 13, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cliche et al. (US pub. 2003/0174743) in view of Green et al. (US pat. 6,888,856).

With respect to claims 2-5, Cliche discloses a tunable etalon assembly (14) including a Fabry-perot ("FP") etalon (12), a photodetector (42) suitable to receive the laser beam after filtering by said FP etalon and generate a detected signal based on transmitted intensity (see fig. 2A and paragraphs 0071 and 0074); and a controller (34) suitable to: generate said etalon tuning signal (44); and receive said detected signal and generate a laser tuning signal based thereon (see fig. 2A and paragraphs 0071 and 0074), thereby facilitating controllably tuning the wavelength of the laser beam (18) emitted by the tunable laser (16) (see fig. 2A). Cliche fail to specifically disclose athermal electric cooler thermal unit, wherein said FP etalon has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning

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signal. A thermal unit, which includes an electrical resistance heating element and a thermal-electric cooler (see Green, col. 10, lines 3-5) wherein said FP etalon, which is an air-spaced (see Green, col. 9, line 45) etalon having glass (see Green, col. 2, line 7) and at least one spacer has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal is well taught by Green (see col. 7, lines 15-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two references above to achieve channel selection by separating the reflectors, as indicated by Green (see col. 7, lines 15 and 16).

With respect to claim 6, Cliche discloses wherein said controller (34) is further suitable to controllably provide said etalon tuning signal (18) (see fig. 2A). Cliche fail to specifically disclose the thermal unit maintains said FP etalon at or changes said FP etalon to a specific temperature, thereby setting said paired reflectors to a corresponding separation where the FP etalon has a corresponding resonant frequency. The thermal unit maintains said FP etalon at or changes said FP etalon to a specific temperature, thereby setting said paired reflectors to a corresponding separation where the FP etalon has a corresponding resonant frequency is well taught by Green (see col. 13, lines 26-30 and col. 10, lines 3-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Green's invention with Cliche to tune the laser, as indicated by Green (see col. 13, lines 24-26).

With respect to claim 7, Cliche and Green disclose everything as claimed above. In addition, Cliche discloses a controller (34) is further suitable to select a lock point with respect to the transmitted intensity of the laser beam (28) detected by said photodetector (30) (see fig. 2A and paragraph 0074); and said controller (34) is further suitable to controllably provide said laser tuning signal (39) such that the tunable laser (16) emits the laser beam (18) with a wavelength that results in the transmitted intensity coinciding with said lock point (see fig. 2A and paragraph 0075). As a reference, frequency and wavelength are used interchangeably; for example, see paragraph 0006.

With respect to claim 8, Cliche and Green disclose everything as claimed above. In addition, Cliche discloses wherein said controller (34) is further suitable to servo lock said laser tuning signal (18) in response to said detected signal (32) (see fig. 2A and paragraph 0074), thereby permitting locking the laser beam at a specific wavelength by maintaining said FP etalon at a specific temperature (see paragraphs 0003 and 0075). As a reference, frequency and wavelength are used interchangeably; for example, see paragraph 0006.

With respect to claim 10, Cliche discloses a beamsplitter (20) suitable to receive and split the laser beam (18) into first (22) and second (24) beam portions (see figure 2A); a tunable etalon assembly (14) including a Fabry-perot ("FP") etalon (26), a coupler suitable to alternately receive and redirect either of said second beam portion and the second laser beam as a tuning beam portion (see paragraph 0070); a first

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photodetector (30) suitable to receive the laser beam after filtering by said FP etalon and generate a detected signal based on transmitted intensity (see fig. 2A and paragraphs 0071 and 0074); a second FP etalon (12) suitable to receive and wavelength filter said second beam (24) portion (see fig. 2A and paragraph 0074); a second photodetector (42) suitable to receive said second beam portion after filtering and generated a second detected signal (44) based on transmitted intensity (see fig. 2A and paragraphs 0071 and 0074) and a controller (34) suitable to: generate said etalon tuning signal (32); and receive said detected signal and generate a laser tuning signal based thereon (see fig. 2A and paragraphs 0071 and 0074), thereby facilitating controllably tuning the wavelength of the laser beam emitted by the tunable laser (16) (see fig. 2A); and receive said second detected signal (44) and counts peak valley cycles therein, thereby facilitating determination of how much the wavelength of the laser beam emitted by the tunable laser has been tuned (see paragraph 0018).

. Cliche fail to specifically discloses a thermal unit, wherein said FP etalon has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal. A thermal unit, which includes an electrical resistance heating element and a thermal-electric cooler (see Green, col. 10, lines 3-5) wherein said FP etalon, which is an air-spaced (see Green, col. 9, line 45) etalon having glass (see Green, col. 2, line 7) and at least one spacer has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal is well taught by Green (see col. 7, lines 15-30). It

would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two references above to achieve channel selection by separating the reflectors, as indicated by Green (see col. 7, lines 15 and 16).

With respect to claim 12, Cliche discloses a first beamsplitter (20) suitable to receive and split the first laser beam into first and second beam portions (22 and 24); a coupler suitable to alternately receive and redirect either of said second beam portion and the second laser beam as a tuning beam portion (see paragraph 0070); a first Fabry-perot ("FP") etalon (26) suitable to receive and wavelength filter said first beam portion (see fig. 2A and paragraph 0074); a first tuning photodetector (30) suitable to receive tuning portion after filtering and generate a first detected signal (32) based on transmitted intensity (see fig. 2A and paragraphs 0071 and 0074); a controller (34) receive said first detected signal (32) and generate a first tuning signal based thereon to tune the first tunable laser to emit the first laser beam at a specific known wavelength (see fig. 2A and paragraphs 0071 and 0074); control said first tuning signal (22) to servo lock the first laser beam to said known wavelength (see fig. 2A and paragraph 0074); generate said etalon tuning signal such that said tuning detected signal is at a known point on a peak-valley curve for said tuning FP etalon (see fig. 5B and paragraph 0013); record a first value for said etalon tuning signal when said tuning beam portion comes from the first laser beam (22) and said tuning detected signal (32) is at said known point (see paragraph 0074); record a second value for said etalon tuning signal when said tuning beam portion comes beam from the second laser (see paragraph 0075);

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generate said etalon tuning signal such that said second value matches said first value, thereby tuning said tunable etalon across the difference in wavelengths of the first and second from the second tunable lasers (see paragraph 0018); report on said first and second tuned values via an output link, thereby providing information about the difference said known wavelength emitted by said first tunable laser and wavelength emitted by said second tunable laser (see paragraph 0084). Cliche fail to specifically disclose a thermal unit, wherein said FP etalon has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal. A thermal unit, which includes an electrical resistance heating element and a thermal-electric cooler (see Green, col. 10, lines 3-5) wherein said FP etalon, which is an air-spaced (see Green, col. 9, line 45) etalon having glass (see Green, col. 2, line 7) and at least one spacer has paired reflectors to receive and wavelength filter the laser beam and said thermal unit thermally effects the separation of said paired reflectors in response to an etalon tuning signal is well taught by Green (see col. 7, lines 15-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the two references above to achieve channel selection by separating the reflectors, as indicated by Green (see col. 7, lines 15 and 16).

With respect to claim 13, Cliche discloses a second beamsplitter (54) suitable to receive and split the second laser beam (40) into third and fourth beam portions (see fig. 5A), wherein said third beam portion is received by the coupler; see paragraph 0070, which stated that the beam splitting device (20) (in fig. 2A) may be embodied in a

plurality of manners, such as a beam splitter, or a fiber coupler: a second FP etalon (12) suitable to receive and wavelength filter said fourth beam portion (see fig. 5); a second photodetector suitable to receive said fourth beam portion after filtering and generate a second detected signal based on transmitted intensity (see fig. 5A); and said controller further suitable to receive said second detected signal and controllably generate a second tuning signal based thereon to servo lock the second tunable laser to emit the second laser beam at a specific wavelength (see fig. 5A and paragraphs 0074 and 0075).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cliche et al. (US pub. 2003/0174743) in view of Green et al (US pat. 6,888,856) and further in view of Kner et al. (US pub. 2001/0017876).

With respect to claims 9 and 11, Cliche and Green disclose that the controller is further suitable to receive and employ said temperature signal when generating said etalon tuning signal (see Cliche, paragraph 0097). Cliche and Green also disclose a second FP etalon (12) is part of a fixed space etalon (see Cliche, Fig. 2A). Cliche and Green fail to specifically disclose a tunable etalon assembly further includes a temperature sensor suitable to provide a temperature signal. A tunable etalon assembly further includes a temperature sensor suitable to provide a temperature signal is well taught by Kner (see paragraph 0014). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the references above to

achieve provide a controlled output beam of a selected wavelength, as indicated by Kner (see paragraph 0014).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Green et al. (US pat. 6,879,619) discloses a system for tuning the wavelength emitted by a tunable laser without specifically disclosing a second beamsplitter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is 571-272-8596. The examiner can normally be reached on 9:00am to 5:00 pm.

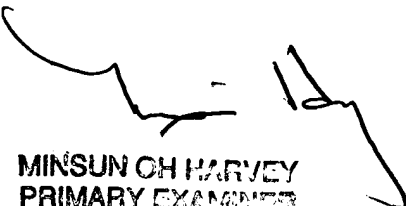
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MINSUN OH HARVEY
PRIMARY EXAMINER